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(12) **United States Patent**  
Liu et al.(10) **Patent No.:** US 6,440,420 B1  
(45) **Date of Patent:** Aug. 27, 2002(54) **METHOD FOR EXTRACTING OLEAGINOUS SUBSTANCES FROM GERMINATION-ACTIVATED *GANODERMA LUCIDUM* SPORES**

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(57) **ABSTRACT**

The present invention relates to a method for extracting the oleaginous substances from sporoderm-broken Ganoderma spores using SCF—CO<sub>2</sub>. The method contains the steps of: (1) inducing germination of Ganoderma spores by incubating the spores in a nutritional solution; (2) activating the Ganoderma spores by placing the germination-induced spores in a well ventilated culture box kept at constant temperature and humidity; (3) breaking the Ganoderma spores by a mechanical means to obtain the sporoderm-broken spores; and (4) extracting the oleaginous substances from the sporoderm-broken spores using a supercritical fluid—carbon dioxide (SCF—CO<sub>2</sub>) extraction method. The preferred supercritical conditions include 5 M to 60 M Pa of pressure; 32° C. to 85° C. of temperature; and 5 kg/h to 80 kg/h of flow capacity rate. The total extraction time in SCF—CO<sub>2</sub> is between 0.5 hour to 6 hour. The method produces approximately 37% by weight of oleaginous substances from the sporoderm-broken Ganoderma spores. These oleaginous substances are transparent and contain the special fragrance of Ganoderma spores. There is no trace of deposit, solvent residue, or oxidization in the oleaginous substances.

19 Claims, No Drawings